

VISIT...

LANZAROTE
Caliente.COM

A Posthuman Lexicon: A Guide to the Language of Techno-Futurism

James A. Herrick
Hope College

Reports on Transhumanism, human enhancement and the posthuman are increasingly common in the press. Associated and often elusive terms such as synthetic biology, nanotechnology and the Singularity attend discussions of the looming biotech and information revolution. While widely employed by science reporters and true believers, techno-futurist terminology, however, remains largely unfamiliar or esoteric to the public. As we prepare to enter the Posthuman Era, this brief lexicon is offered as an effort to define and differentiate contemporary techno-futurist social movements and associated developments.

Transhumanism: A worldwide movement organized around the idea that *homo sapiens* represent a transitional stage in human evolution; thanks to exponential advances in computing power and biotechnology, something (or someone) better is coming—the posthuman. In the 1980s Transhumanist philosopher **Max More** began publishing *Extropy Magazine*, and in 1998 philosophers **Nick Bostrom** and **David Pearce** organized the **World Transhumanist Association**. Today the major Transhumanist organization simply identifies itself as **H+**, an abbreviation of Humanity Plus. However, the term and the concept were promoted in the mid-twentieth century by **Sir Julian Sorrell Huxley** (1887-1975)—credited with coining the term—and later by **Fereidoun Esfandiary** (1930-2000), who adopted and published under the name **FM- 2030**. Transhumanists now sponsor regular meetings in major cities around the world.

Posthuman: What Transhumanists anticipate—the inevitable next iteration of the human, a new species introduced through technological assistance of evolutionary processes. The posthumans are imagined to be more intelligent, stronger, longer lived, more morally astute, and more emotionally capacious than present humans. Unlike Transhumanist, the term posthuman does not suggest an organized movement. Moreover, some advocates of posthumanity do not identify themselves as Transhumanists.

Human Enhancement Movement: Not an organized movement, but an umbrella term describing those who support the goal of radical technological improvements to the body and brain, including radical extension of human life spans, and pharmaceutically and technologically augmented intellect. Many technological developments of interest to human enhancement advocates have been pursued, not to advance the movement's goal or radical enhancement, but to address a particular therapeutic interest (e.g. mind controlled prosthetics) or pure research goals (e.g. exploring the potential for storing data in strands of DNA). This fact of unintended technological appropriation is sometimes called **dual use**—the idea that emerging technologies always have more than one potential application. Dual use has led some medical professionals to discuss the

Therapy vs. Enhancement divide, a concern that therapy alone is the proper use of developments in medical technology, but that many therapeutic technologies are readily adapted to expensive and ethically questionable enhancement goals.

The Singularity: Though often used as shorthand for the technological future, the term properly describes a point in the not-too-distant future when exponential developments in technology eventuate in a sudden rupture in history, transforming human existence and perhaps the cosmos forever. This narrower use of the term is closely associated with inventor **Ray Kurzweil** and his 2005 book, *The Singularity is Near*. A few in the Transhumanist movement and some technophiles outside the movement now refer to themselves as **Singularitarians**. The Singularity concept also informs the Silicon Valley-based center for techno-futurist entrepreneurship, **Singularity University**, co-founded by Kurzweil and **X-Prize** developer **Peter Diamandis**. Critics of the concept within the technology world include computer scientist **Jaron Lanier**, author of *You are Not a Gadget* (2010).

Biotechnology: A broad term encompassing all technological developments that involve altering, augmenting or manipulating living organisms from individual cells to human bodies, and biological systems from DNA to the brain's neural networks. Such alterations, augmentations and manipulations may, often do, involve combining biological systems with mechanical systems. Biotechnologies of particular interest to enhancement advocates and Transhumanists include advances in genetic engineering, synthetic biology, therapeutic implant technology (e.g. cochlear implants), brain-machine interface research (e.g. technologies that allow hands-free computer use), enhancement-related pharmacology (especially drugs that enhance memory, attention, life span or moral behavior), cellular therapies (particularly those that fight disease, increase longevity, or restore lost bodily functions such as vision), therapeutic nanotechnologies, and advanced prosthetics including exoskeleton research. Among the most widely reported (and famously mis-reported) of biotechnological developments in recent years—also of great interest to Transhumanists and human enhancement advocates—is **regenerative medicine**, the creation from a patient's own cells of transplantable organs and other tissues with therapeutic uses, such as skin. So far, functional complex human organs such as kidneys have not been produced using regenerative medical techniques, though simpler organs such as bladders have.

Artificial Intelligence or AI: Computer-based, autonomous intelligence. **Strong AI**, also called **Artificial General Intelligence (AGI)**, refers to the goal of matching or exceeding human levels of intelligence in a machine, whether computer or computer-based robot. The dean of AI research is legendary MIT computer scientist Marvin Minsky, a man responsible for training generations of AI researchers and shaping the field of research. Transhumanist interest in **autonomous robots**—robots capable of independent decision-making and action—is merely an interest in one application of AI. In futurist circles robotics and AI research are often discussed as if they were the same undertaking. The **Turing Test**, named after British mathematician **Alan Turing** (1912-1954), is invoked as the standard for determining the success of AGI efforts. Meeting the test involves creating an AI whose responses cannot be distinguished from those of a

human being in a blind test. AGI is seen as a key to bringing about the **uploading of consciousness** into machines, a favorite theme of Transhumanist discourse and one model proposed for technological immortality. Artificial Intelligence is easily confused with efforts to create a **synthetic brain**, such as the **Blue Brain Project** in Switzerland. Synthetic brain research, however, attempts to re-create the neural operations and patterns of a mammalian brain in machine form. AI researchers do not insist that computer-based intelligence must result from such brain-like devices, and employs various models of intelligence. The goal of AGI is human-level intelligence in a machine; the goal of synthetic brain research is to mimic the actual structures of a brain in a machine. Moreover, synthetic brain research is closely aligned, not with robotics and problem solving, but with discovering therapies for dementia and other brain disorders.

Synthetic Biology: A term for all efforts to create new forms of cellular life or radically alter existing forms using chemical building blocks in the laboratory, cellular technology, and advances in molecular biology. The term is also used to describe the creation of bio-mechanical devices based on such breakthroughs. The signal event in synthetic biology to this point in time was **J. Craig Venter's** research group's creation of a new form of bacterial life by replacing the DNA in a bacterium with DNA the group had manufactured from chemical components. This occurred in 2007. Synthetic biology is not the same as genetic engineering, though the former may involve the latter. **Genetic engineering** is a broader term referring to efforts to change the genetic structure of a cell in order to achieve a desired trait in an organism. For instance, the introduction into a plant's DNA of a gene that allows it to resist a fungus would constitute genetic engineering. Controversial **GMOs** or **Genetically Modified Organisms** are usually the result of genetic engineering rather than synthetic biology research.

Nanotechnology: A broad term referring to all research involving extremely small mechanical devices, devices constructed of biological molecules such as DNA, and hybrids of very small mechanical devices and microscopic biological units. Nanotechnology involves advances in materials science, such as the development of extremely strong carbon nanotubes, and proposed microscopic devices that would circulate in the blood to detect diseases and repair damaged cells. For some in the Transhumanist and human enhancement movements, nanotechnology is the key to the technological future, a vision first popularized in **Eric Drexler's** 1986 book, ***Engines of Creation***.

DARPA: The Defense Advanced Research Projects Agency, a unit of the American Department of Defense. DARPA supports through generous grants many research efforts of interest to Transhumanists and enhancement advocates. Not surprisingly DARPA maintains a particular interest in military applications of emerging technologies, such as burden-bearing robots, augmenting physical strength through exoskeleton applications, and enhancing attentiveness and wakefulness through electronic brain stimulation. These days one cannot discuss human enhancement and related concerns such as robotics research without discussing DARPA funded projects.

Human Nature: The principal source of controversy in discussions of Transhumanism, the posthuman, biotechnology and human enhancement. For many Transhumanists and other advocates of radical human enhancement, an old-fashioned concept reeking of outdated religious assumptions and embraced by **bio-conservatives**. As such, the notion is vigorously challenged on various grounds—it doesn't exist; if it does exist no one can say what it is; it may exist but is ever in flux. For opponents of radical technological alteration or augmentation of human beings, human nature is the only quality that identifies us as human, and thus the only fact in the world that warrants protecting human rights. Protecting human nature is, moreover, the only moral guard against actually finding ourselves face to face with the ultimate abomination—posthumans.

James A. Herrick is the author of *Scientific Mythologies* (IVPress, 2008) and co-editor with Michael J. Hyde of *After the Genome: A Language for our Biotechnological Future* (Baylor University Press, 2013). Inquiries regarding reprinting "A Posthuman Lexicon" should be directed to herrick@hope.edu